

EXHIBIT A



Atty Dkt AMP0035PCON
AV-3033N1
PATENT

sch
4-21-87

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

DANIEL BOULIER

Serial No.: unknown

Group Art Unit: 262

Filed: unknown

Examiner: D. Harvey

25/H.

For: ELECTRONIC STILL STORE
WITH HIGH SPEED SORTING
AND METHOD OF OPERATION

PRELIMINARY AMENDMENT

The Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

Please amend the file wrapper continuation application
identified above as follows.

In the Specification

At page 1, line 11 after "may" and before "be", delete
"than" and substitute --then--.

At page 2, line 25, delete "positioned reduce" and
substitute --positioned, reduced--.

At page 5, line 1, delete "referred" and substitute
--preferred--. At line 27, delete "fourth" and
substitute --forth--.

At page 6, line 4, insert after "22" and before "is"
-- , which in the preferred embodiment is a random access
memory, --. At line 8, after "24" and before "." insert
--in the preferred embodiment but which can be any bulk
storage memory device in other embodiments--

H'
H2

-2-

At page 7, line 9, delete "resolutioncopy" and substitute --resolution copy--. At line 16, delete "usedin" and substitute --used in--. At line 19, delete "continous" and substitute --continuous--.

At page 8, line 7, delete "take" and substitute --taken--. At line 6, after "array" and before "within" insert --as a mosaic which fits--.

In the Drawings

Please approve the drawing change marked on the enclosed sketch.

In the Claims:

Please cancel claim 1.

SUB I 37
2. (Twice Amended) An electronic still store system comprising:

an image store means for [retrievable] retrievably storing therein a plurality of image frame copies of video frames [of video images], the image frame copies comprising data representing a full spatial resolution image [frame copy] and [a] corresponding data representing a reduced spatial resolution image [frame copy] of each frame of video [images] data;

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an image store
a frame store means which is operable in a first mode [to receive and store] for receiving and storing one of said full spatial resolution images [frame copies] from [the] said image store means and for repetitively [generate] generating a full spatial resolution [output] image [frame] output and operable in a second mode [to receive] for receiving from the image store means and [store] storing a plurality of said reduced spatial resolution images [image frame copies] each at selectively located different positions, the frame store means being further operable in the second mode [to] for repetitively generating [generate a reduced spatial resolution] output

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image [frame having an image frame] comprising [a] the stored plurality of said reduced spatial resolution images [image frame copies selectively located at different positions within the output image frame]; and

a size reducer means [coupled to receive] for receiving from the frame store [a] the stored full spatial resolution image [frame copy] and in response thereto [to return] returning to the frame store means a corresponding reduced spatial resolution image [frame copy] and wherein the frame store is operable [to receive and store] for receiving and storing the corresponding reduced spatial resolution image [frame copy] while continuing to store the stored full spatial resolution image [frame copy].

3. (Twice Amended) The electronic still store system according to claim 2 [above], wherein the corresponding reduced spatial resolution image [frame copies] each have a spatial resolution of [one-fourth] one-fourth the spatial resolution of the corresponding full spatial resolution image [frame copies in each dimension].

4. (Twice Amended) The electronic still store system according to claim 2 [above], [further comprising] wherein said frame store means includes a central processing unit, controlled by an operator, coupled and operable in said first mode to select which of said [image frame copies] full spatial resolution images stored in said image store means are to be retrieved from the image store means and coupled and operable in said second mode to select which of said reduced spatial resolution images stored in said image store means are to be retrieved and stored in said frame store means and to select the [location] different positions within the frame store means at which each of

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Handwritten: #3 amend.
said retrieved [image frame copies] reduced spatial resolution images is stored.

Please cancel claim 5.

Handwritten: 4
4. (Twice Amended) The electronic still store system according to claim [5 above] *Handwritten: 1* wherein said frame store means further [comprising] comprises an output digital-to-analog converter coupled to receive [said] output image data [frames] from the [the] frame store means and in response thereto to generate an analog video signal representing ^{an} ~~the received~~ output image [frames]; and

Handwritten: 1
a. monitor coupled to receive the analog video signal and display the output image [frames] represented thereby.

Handwritten: 5
5. (Twice Amended) The electronic still store system according to claim *Handwritten: 4* [above], further comprising a video input means for generating an input analog video signal representing [a sequence of] an input video image [frames] and an analog-to-digital converter coupled between the video input means and the frame[s] store means [and] for converting the input analog video signal to a digital form [in which] such that digital data representing said input video image frame [can be] is received and stored by the frame store means.

Please cancel claims 8 through 14.

Handwritten: SUB 14

Handwritten: 5
15. (Amended) A video still store system comprising:
a size reducer coupled to receive a full size image data set representing a full size image frame and to produce a reduced size image data set representing a corresponding reduced size image frame in response thereto;

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an image store for storing a plurality of said full size image data sets representing a plurality of full size image frames and for storing a plurality of corresponding reduced size image data sets representing a plurality of reduced size image frames, each of said reduced size image data sets corresponding to one of said full size image data sets; and

45 *Amended*
 a frame store means coupled to selectively receive from either an external source or said image store and store one of said full size image data sets, said frame store [is] being operable such that when a full size image data set is received from an external source or is received from said image store and said image store does not contain a corresponding reduced size image data set, said frame store outputs a copy of said full size image data set to said size reducer and [in response thereto] receives a corresponding reduced size image data set which is outputted to said image store for storage with the corresponding full size image data set.

Please add new claims 16-28.

BIV

16. An apparatus for storing video images as pixel data comprising:

46 *Amended*
 means for receiving and storing in a first memory pixel data representing video images having a first resolution, and for generating from said pixel data representing said video image at said first resolution pixel data representing a corresponding image having a second, lower resolution and for storing said second resolution image data with said first resolution image data in a second memory; and

means for selectively accessing either said data for the image at its first resolution or only the

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corresponding image data at said second resolution for any image stored in said bulk storage memory for further processing.

17. The apparatus of claim 16 wherein said means for selectively accessing allows access to a plurality of images at said second resolution and storage of them in selected blocks of memory in said first memory so that they may be further processed as a mosaic of reduced size images.

18. An apparatus for storing video pixel data representing video images of a first resolution and, for each image at a first resolution a corresponding video image at a second resolution comprising:

random access memory means for storing video pixel data representing a full size image at said first resolution and a corresponding reduced size version thereof at a second resolution;

means for storing one at a time in said random access memory means a plurality of said full size images;

memory means for receiving video pixel data from said random access memory means and for storing said full size images and the corresponding reduced size images received from said random access memory means and for outputting, upon a user's command, a selected full size image or only the corresponding reduced size image for the selected full size image for storage in said random access memory means;

means for generating said corresponding reduced size image from any said full size image in said random access memory means to be transferred to said memory means and for storing the video pixel data representing said reduced size image in said random access memory means prior to

Handwritten initials: "H6" and "Am. 11/11/06".

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storage of the contents of said random access memory means in said memory means.

19. An apparatus for storing video data as full size image and reduced size image of pixel data comprising:

random access memory means for storing video pixel data presented at an input port and having at least one output port;

means for storing video pixel data representing a full size video image at a first resolution in a first group of memory locations in said random access memory means;

bulk storage memory for storing video pixel data and for presenting selected blocks of video data at said input port for storage by said random access memory;

size reducing means coupled to said random access memory means for accessing said image video pixel data stored in said random access memory representing said full size image at said first resolution, and for reducing said image to a reduced size counterpart image at a second, lower resolution and for storing said reduced size image at said second resolution in said random access memory in a second group of storage locations therein; and

control means coupled to said random access memory means, said bulk storage means and to said size reducing means for causing said size reducing means to generate said reduced size image at said second resolution and to store same in said random access memory means in said second group of storage locations each time the video pixel data from said random access memory means is to be transferred to said bulk storage means for storage, and for causing the video pixel data from both said first and second plurality of memory locations in said random access memory means to be transferred to said bulk storage means for storage after said reduced size image is generated and

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stored in said second group of storage locations, and for causing selective transfer of video pixel data from said bulk storage means into said random access memory means for storage such that either said first resolution image or only the reduced size second resolution counterpart are transferred into said random access memory means.

20. The apparatus of claim 19 wherein said control means also is coupled for causing selective transfer of said second resolution image directly from said size reducing means into said bulk storage means.

21. The apparatus of claim 19 wherein said control means also is coupled for controlling the memory locations in said random access memory means where the video pixel data defining said second resolution image are stored upon transfer from said bulk storage means.

22. The apparatus of claim 21 wherein said size reducing means produces said second resolution image with 1/16th the resolution of said first resolution image and wherein said control means is coupled for causing transfer of said second resolution image into said random access memory for storage at a selected one of 16 predetermined blocks of memory locations.

23. A system for storing and retrieving video data representing video images which are displayed as rasters of vertically distributed horizontal lines, each represented video image normally occupying a raster of selected vertical and horizontal size, the system comprising:

a video image size reducer having an input coupled to receive video data representing a video image

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corresponding to a selected raster size and generate therefrom at an output video data representing a reproduction of said video image corresponding to a selected fractional-size of said selected raster size;

a first store having an input for receiving video data for storage and an output for providing video data retrieved from storage, said first store having a capacity for storing video data representing a video image corresponding to of the selected raster size together with video data representing a reproduction of a video image corresponding to the selected fractional-size of said selected raster size;

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a second store having an input for receiving video data for storage and an output for providing video data retrieved from storage, said second store having a capacity for storing video data representing a plurality of video images each corresponding to a video frame of the selected raster size and video data representing the reproduction of each video image of selected fractional size of said selected raster size; and

means for selectively transferring from said first store to said second store either said video data representing a video image corresponding to the selected raster size or said video data representing a reproduction of a video image which is the selected fractional size of said selected raster size.

24. A method of storing video pixel data comprising: receiving data for a full size image at a first resolution and generating therefrom data representing a reduced size reproduction image at a second, lower resolution;

storing both the full size and the reduced size image in a bulk storage medium; and

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selectively accessing either the full size or said reduced size image from said bulk storage medium.

25. The method of claim 24 further comprising the steps of ~~storing~~ a plurality of full size images and their reduced size reproduction images and accessing a plurality of selected reduced size images and storing them in selected blocks of storage locations in a random access memory.

SUB IS

26. The method of claim 24 wherein each full size image occupies upon display a raster of selected vertical and horizontal size, and further comprising the steps of storing a plurality of full size images and their reduced size reproduction images and accessing a plurality of selected reduced size images and storing them in a random access memory and outputting the group of stored reduced size reproduction images as a mosaic of reproduction images occupying a raster of the selected vertical and horizontal size.

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Cured

27. A method of storing video pixel data comprising:
receiving and storing in random access memory video pixel data comprising a full size image;
generating therefrom video pixel data representing a reproduction thereof in the form of a reduced size image at a lower resolution from the full size image data and storing the pixel data representing the reduced size image so generated in additional storage locations in said random access memory along with the full size image;
storing both the full size and the reduced size image in bulk storage memory;
selectively transferring either the full size image or the reduced size image from said bulk storage memory means

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into said random access memory means for further processing.

28. A video still store system comprising:

an image store for storing full size image data sets representing a plurality of full size images and for storing a plurality of reduced size image data sets representing a plurality of reduced size images, each of said reduced size image data sets corresponding to one of the full size image data sets;

an external source input for receiving from an external source full size image data sets;

a memory for simultaneous storage of one of said full size image data sets and the corresponding one of said reduced size image data sets;

a size reducer means for receiving from said memory the stored one of said full size image data sets, and for producing and returning to said memory the corresponding reduced size image data set;

said memory being coupled and operative to selectively receive from either the external source input or the image store and to store said one of said full size image data sets, and to output as an output image the stored one of said full size image data sets, and to communicate to the size reducer the stored one of said full size image data sets, and to receive from the size reducer and to store the corresponding reduced size image data set, and to provide to the image store both the stored one of said full size image data sets and the corresponding reduced size image data set, and to receive from the image store and to store at different selected locations selected ones of said plurality of reduced size image data sets, and to output as said output image the stored selected ones such that the selected ones are disposed at different locations

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-12-

K/b Amended
within the output image or to receive and store from said image store only a full sized image data set; and means to retrieve data from said memory and display it on a raster scanned video display.

REMARKS


The undersigned thanks the Examiner for the courtesy of the telephone interview conducted during the prosecution of the parent to the above identified case. In response to the discussions therein of new claims written by the undersigned, said new claims are submitted herewith for examination based on the substance of the interview. Further, some of the now pending claims have been retained and amended to eliminate the problems under 35 U.S.C. Section 112 noted in the outstanding office action. New claim 28 is the Examiner's suggested rewrite of claim 9 with some minor changes in terminology and one additional element.

New claims 16 through 28 are in accord with the novelty identified by the Examiner in the first Office Action in the parent of the above identified U.S. patent application. Based upon the content of the Hugh Boyd, Quantel reference, which teaches accessing from disk the entire full size picture before size reduction can occur, these new claims are believed to be allowable. This is so because they teach storing a reduced image with the full size image each time a full sized image is to be stored from the frame buffer to the disk. This allows the user the option of retrieving the entire full size image or only the reduced size counterpart from disk. Mosaics of reduced size counterpart images may be made by accessing several reduced size images and moving them around in the frame buffer. The access time for each reduced size image

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is only a fraction of the access time for the entire full size image. This system obviously has a major advantage over the Boyd, Quantel system in that access time for a frame comprised of one or more reduced images will be substantially shorter than the Boyd, Quantel system can provide. This is because the Boyd, Quantel reference does not store a reduced image automatically with the full size counterpart each time a full size image in the frame buffer is to be stored on disk. Thus to access any particular reduced image, the entire full size image must be accessed and loaded into the size reducer. Clearly this takes more time than accessing only the data describing the reduced size image from the disk.

Respectfully submitted,
CIOTTI & MURASHIGE

By 
Ronald Craig Fish
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20 November 1986
0323r



EXHIBIT B

Serial No. 018,786

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Art Unit 262

1. Claims 2-4, 6, 7 and 15-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

1) In claim 2, line 9, "frame of video data" has no antecedents and should read --of the video frames--.

2) In claim 2, line 21, --an-- should be inserted before "output".

3) In claim 2, line 27, --means-- should be inserted after "store". Similar clarification is needed in line 31.

4) In claim 2, line 32, "corresponding" should be changed to --returned--.

5) In claim 5, line 2, "corresponding" should be deleted.

6) In claim 3, line 3, "image" should be --images--.

7) In claim 3, line 4, "one-fourth" appears to be misdescriptive because each dimension is reduced by $\frac{1}{4}$ thus the total resolution is reduced by $\frac{1}{16}$ (see column 22).

8) In claim 6, line 7, "the received" has no antecedents and should be changed to --an--.

9) In claim 15, line 6, "said" should be deleted.

10) In claim 15, line 8, "corresponding" should be deleted.

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Art Unit 262

11) In claim 15, line 15, "one of said" should be changed to --a--.

12) In claim 15, line 15, "sets" should be change to --set--.

13) In claim 15, line 16, "a" should read --the--.

14) In claim 15, line 23 and 24, "with the corresponding full size image data set" is indefinite because it is not clear if the statement refers to actually storing the full size set or to the storing of the reduced set with a previously stored full size set.

15) In claim 16, line 6, "said video image" has no antecedent basis.

16) In claim 16, lines 8 and 9, "said second resolution image data" has no antecedent basis.

17) In claim 16, lines 9 and 10, "said first resolution image data" has no antecedent basis.

18) In claim 16, line 12, "its" should read --said--.

19) In claim 16, line 13, "corresponding image data at" should read --said data for the corresponding image having--.

20) In claim 16, lines 13 and 14, "for any image stored" is indefinite because it is not clear to what images it refers.

21) In claim 16, line 14, "said bulk storage memory" has no antecedent basis.

22) In claim 17, line 2, "allows access" is indefinite because it is not clear what means is being accessed.

Serial No. 081,786

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Art Unit 262

23) In claim 18, line 3, "each image" should read --each of the images--.

24) In claim 18, line 3, "a" should read --said--.

25) In claim 18, line 8, "a" should read --said--.

26) In claim 18, lines 9 and 10 are indefinite because it is not clear how the storing recited in lines 9 and 10 relates to the storing recited in lines 5-8. Are the full size images recited in line 10 store as part of the pixel data recited in lines 5 and 6? Clarification is needed.

27) In claim 18, line 11, "video pixel data" is indefinite because it is not clear if it refers back to the pixel data recited in lines 5 and 6.

28) In claim 18, lines 12 and 13, "said full size images" is indefinite when referred back to the problems cited for lines 3-11.

29) In claim 18, "the corresponding reduced size images" has no antecedent basis and is indefinite.

30) In claim 18, line 17, "for storage" is indefinite when referred back to the claim has any data been stored.

31) In claim 25, it is not clear if the "storing" recited in line 2 refers back to the storing recited in claim 24. Similar clarification is needed for "accessing" recited in line 3.

32) In claim 25, line 4, does "selected reduced size images" refer to selected ones of the

Serial No. 081,786

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Art Unit 262

reduced size reproduction images recited in line 3.
Clarification is needed.

33) In claim 26, line 1 and 2, "each full size image" has no antecedent basis. Lines 4-5 require clarifications as cited for claim 25.

34) In claim 26, line 7, "outputting the group of stored reduced size images" is indefinite because: "the group" has no antecedent; it is not clear if "stored" refers back to the storing recited in line 4 or the storing recited in line 5.

35) Claims 27 and 28 require similar clarifications as exemplified above.

36) Throughout the claims the use of the term "operable" is indefinite because it is not clear if the term is used to recite how the means actually operates or how the means is capable of operating. The examiner notes that any video processing circuit comprising a computer and sufficient memory is considered to be capable of the recited operation if appropriately programmed. Clarification is needed.

2. The applicant is asked to review the claims and to correct any section 112 problems similar to.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless-

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Serial No. 081,786

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Art Unit 262

4. Claims 16, 17, and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. '776.

1) With respect to claims 16, 17, and 24-26:

Taylor et al. '776 disclose a still picture storage system as is shown in Figure 19. The system comprises a first memory 14/24 which receives picture data representing full size images. The system includes a size changing means 23 for receiving the full size images and for producing reduced size copies. The system further comprises a disc store 18/20 for storing both the full size and the reduced size image frame copies (column 3, lines 22-35). Taylor et al. further disclose that a multiple display of pictures is made by writing more than one compressed picture from the disc into the frame store (column 12, lines 38-43).

2) With respect to claim 23:

Taylor et al. further disclose interfacing a VTR to the disc store to provide additional storage (see Figure 18). The VTR and the disc store are both capable of storing a plurality of the full and reduced size images.

5. The examiner notes that the art has been applied to the extent of the examiner's understanding of the claimed system in view of the section 112 problems.

6. Claims 2, 15, 18, 19, 27 and 28 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112.

Serial No. 081,786

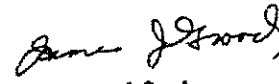
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Art Unit 262

7. Claims 3, 4, 6, 7 and 20-22 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112 and to include all of the limitations of the base claim and any intervening claims.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Harvey whose telephone number is (703) 557-7948.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 557-3321.


James J. Grody
Supervisory Patent Examiner
Art Unit 262

D. HARVEY:flj *DN*

703-557-7948

12-21-87

EXHIBIT C

Manual of Patent Examining Procedure

Eighth Edition

Incorporating Revision No. 5

Volume 2

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0-314-95877-0

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2173.05(e) Lack of Antecedent Basis [R-5]

A claim is indefinite when it contains words or phrases whose meaning is unclear. The lack of clarity could arise where a claim refers to "said lever" or "the lever," where the claim contains no earlier recitation or limitation of a lever and where it would be unclear as to what element the limitation was making reference. Similarly, if two different levers are recited earlier in the claim, the recitation of "said lever" in the same or subsequent claim would be unclear where it is uncertain which of the two levers was intended. A claim which refers to "said aluminum lever," but recites only "a lever" earlier in the claim, is indefinite because it is uncertain as to the lever to which reference is made. Obviously, however, the failure to provide explicit antecedent basis for terms does not always render a claim indefinite. If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite. *>Energizer Holdings Inc. v. Int'l Trade Comm'n*, 435 F.3d 1366, 77 USPQ2d 1625 (Fed. Cir. 2006) (holding that "anode gel" provided by implication the antecedent basis for "zinc anode"); *< Ex parte Porter*, 25 USPQ2d 1144, 1145 (Bd. Pat. App. & Inter. 1992) ("controlled stream of fluid" provided reasonable antecedent basis for "the controlled fluid"). Inherent components of elements recited have antecedent basis in the recitation of the components themselves. For example, the limitation "the outer surface of said sphere" would not require an antecedent recitation that the sphere has an outer surface. See *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359, 61 USPQ2d 1216, 1218-19 (Fed. Cir. 2001) (holding that recitation of "an ellipse" provided antecedent basis for "an ellipse having a major diameter" because "[t]here can be no dispute that mathematically an inherent characteristic of an ellipse is a major diameter").

EXAMINER SHOULD SUGGEST CORRECTIONS TO ANTECEDENT PROBLEMS

Antecedent problems in the claims are typically drafting oversights that are easily corrected once they are brought to the attention of applicant. The examiner's task of making sure the claim language complies with the requirements of the statute should be carried out in a positive and constructive way, so that minor problems can be identified and easily

corrected, and so that the major effort is expended on more substantive issues. However, even though indefiniteness in claim language is of semantic origin, it is not rendered unobjectionable simply because it could have been corrected. *In re Hammack*, 427 F.2d 1384 n.5, 166 USPQ 209 n.5 (CCPA 1970).

A CLAIM TERM WHICH HAS NO ANTECEDENT BASIS IN THE DISCLOSURE IS NOT NECESSARILY INDEFINITE

The mere fact that a term or phrase used in the claim has no antecedent basis in the specification disclosure does not mean, necessarily, that the term or phrase is indefinite. There is no requirement that the words in the claim must match those used in the specification disclosure. Applicants are given a great deal of latitude in how they choose to define their invention so long as the terms and phrases used define the invention with a reasonable degree of clarity and precision.

A CLAIM IS NOT *PER SE* INDEFINITE IF THE BODY OF THE CLAIM RECITES ADDITIONAL ELEMENTS WHICH DO NOT APPEAR IN THE PREAMBLE

The mere fact that the body of a claim recites additional elements which do not appear in the claim's preamble does not render the claim indefinite under 35 U.S.C. 112, second paragraph. See *In re Larsen*, No. 01-1092 (Fed. Cir. May 9, 2001) (unpublished) (The preamble of the *Larsen* claim recited only a hanger and a loop but the body of the claim positively recited a linear member. The examiner rejected the claim under 35 U.S.C. 112, second paragraph, because the omission from the claim's preamble of a critical element (i.e., a linear member) renders that claim indefinite. The court reversed the examiner's rejection and stated that the totality of all the limitations of the claim and their interaction with each other must be considered to ascertain the inventor's contribution to the art. Upon review of the claim in its entirety, the court concluded that the claim at issue apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, paragraph 2.).

EXHIBIT D



PATENT

In re application of
Daniel A. Beaulier
Serial No.: 018,786
Filed: February 24, 1987
For: ELECTRONIC STILL STORE
WITH HIGH SPEED SORTING
AND METHOD OF OPERATION

) Group Art Unit: 262
) Examiner: D. Harvey
) Attorney Docket No.:
) AV-3033 N2

) I hereby certify that this correspondence is being
) deposited with the United States Postal Service as
) first class mail in an envelope addressed to:
) Commissioner of Patents and Trademarks, Washing-
) ton, D. C. 20231. on April 27, 1988 *gpa*

George B. Almeida 4/27/88
George B. Almeida, Reg. # 20,696 DATE

AMENDMENT

RECEIVED

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

MAY 11 1988

Dear Sir:

GROUP 2601

In response to the Office Action dated January 4,
1988, please amend the above-identified application as
follows. Applicant includes herewith a Request for an
Extension of Time of one month, and authorization for the
payment of the requisite fee of \$56.00.

IN THE SPECIFICATION:

Page 2, line 11, change "Ditigal" to --Digital--;
Page 4, line 18, before "which" insert --in--; after
"which" insert --the sole--;
line 19, delete "1";
line 22, change "FIGURE 1" to --the sole FIGURE--;
Page 5, lines 4-6, change "Apparatus and Method for Chroma

Separation, AV-2883, by" to --the U.S.

Patent No. 4,675,876, issued September 22,

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AV-3033 N2

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1987 to--;;

line 7, before "which" insert --which is assigned
to the same assignee as this application,
and--;

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line 18, change "An" to --The--; change "A/D" to
--A-D--;

line 28, change "afford" to --affords--;

Page 6, line 7, after "or" insert --from--;

line 21, after "initially" insert a comma --,--;

line 22, after "contain" insert a comma --,--;

line 23, after "resolution" delete the comma --,--;

after "image" insert a comma --,--;

Page 7, line 5, after "copy" insert a comma --,--;

line 22, delete "from";

line 25, change "to form" to --, for forming--.

IN THE CLAIMS:

2.1. (thrice amended) An electronic still store
system comprising:

an image store means for retrievably storing
therein a plurality of image frame copies of video frames,
the image frame copies comprising data representing [a] full
spatial resolution images [image] and corresponding data
representing [a] reduced spatial resolution images [image]
of the [each frame of] video frames [data];

[a] frame store means [which is operable in a
first mode] for receiving and storing in a first mode one of

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said full spatial resolution images from said image store means and for repetitively generating a full spatial resolution image output, and [operable] in a second mode for receiving from the image store means and storing a plurality of said reduced spatial resolution images each at selectively located different positions, the frame store means [being further operable] in the second mode further [for] repetitively generating an image output [image] comprising the stored plurality of said reduced spatial resolution images; and

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[a] size reducer means for receiving from the frame store means the stored full spatial resolution image and in response thereto returning to the frame store means a corresponding reduced spatial resolution image [and], wherein the frame store means receives and stores [is operable for receiving and storing] the returned [corresponding] reduced spatial resolution image while continuing to store the stored full spatial resolution image.

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2. (thrice amended) The electronic still store system according to claim 1, wherein the [corresponding] reduced spatial resolution images [image] each have a spatial resolution of one-fourth the spatial resolution of the corresponding full spatial resolution image.

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3. (thrice amended) The electronic still store system according to claim 1, wherein said frame store means

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includes a central processing unit, controlled by an operator[, coupled and operable] in said first mode for selecting [to select] which of said full spatial resolution images stored in said image store means is [are] to be retrieved from the image store means, and [coupled and operable] in said second mode for selecting [to select] which of said reduced spatial resolution images stored in said image store means are to be retrieved and stored in said frame store means, and further for selecting [to select] the different positions within a video [the] frame [store means] at which each of said retrieved reduced spatial resolution images is stored.

Claim 6, line 7, change "the received" to --an--.

Claim 7, line 9, delete "frame".

6.15. (twice amended) A video still store system comprising:

external source means for supplying a full size image data set representing a full size image frame;

a size reducer coupled to receive the [a] full size image data set [representing a full size image frame] for producing therefrom [and to produce] a reduced size image data set representing a corresponding reduced size image frame [in response thereto]:

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an image store for storing a plurality of [said] full size image data sets representing a plurality of full size image frames and for storing a plurality of [corresponding] reduced size image data sets representing a plurality of reduced size image frames, each of said reduced size image data sets corresponding to one of said full size image data sets; and

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[a] frame store means for storing one of said full size image data sets [coupled to selectively receive] from either the [an] external source or said image store, wherein if [and store one of said full size image data sets, said frame store being operable such that when a full size image data set is received from an external source or is received from said image store and] said image store does not supply [contain] a corresponding reduced size image data set, said frame store outputs a copy of said full size image data set to said size reducer, and receives in turn a corresponding reduced size image data set;

wherein [which is outputted to] said image store stores the reduced size image data set along [for storage] with the previously stored corresponding full size image data set.

16. (amended) An apparatus for storing video images as pixel data comprising:

means for receiving and storing in a first memory pixel data representing a video image [images] having

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a first resolution, and for generating from said pixel data representing said video image at said first resolution, pixel data representing a corresponding image having a second[,] lower resolution; [and]

means for storing in a second memory said second lower resolution pixel [image] data together with said first resolution pixel [image] data [in a second memory]; and

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means for selectively accessing said first and second memories to supply either said pixel data for the video image at said [its] first resolution, or [only] said pixel data for the corresponding image [data] at said second resolution, [for any image stored in said bulk storage memory] for further processing.

17. (amended) The apparatus of claim 16 wherein said means for selectively accessing allows access to a plurality of sets of pixel data [images] at said second resolution [and storage of them] in selected groups [blocks] of memory locations in said first memory wherein the pixel data at said second resolution simultaneously is [so that they may be further] processed as a single composite mosaic of reduced size images.

SUBJ

18. (amended) An apparatus for storing video pixel data representing video images of a first resolution and, for each of the images [image] at said [a] first

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resolution, a corresponding video image at a second resolution comprising:

random access memory means for individually storing video pixel data representing one of a succession of full size images [image] at said first resolution and a corresponding reduced size version thereof at said [a] second resolution;

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[means for storing one at a time in said random access memory means a plurality of said full size images;]

memory means for receiving said video pixel data from said random access memory means and for storing said succession of full size images and the corresponding reduced size versions thereof, [images received from said random access memory means] and for outputting upon a user's command, either a selected one of the successive full size images [image] or only the corresponding reduced size versions thereof [image for the selected full size image] for storage back in said random access memory means;

means for selectively generating one of said corresponding reduced size versions [image] from the respective [any said] full size image in said random access memory means, [to be transferred to said memory means] and for transferring [storing] the video pixel data representing said reduced size image to [in said random access memory means prior to storage of] the contents of said memory means via said random access memory means [in said memory means].

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19. (amended) An apparatus for storing video pixel data as at least one full size image at a first resolution, and at least one reduced size image thereof at a second lower resolution, [of pixel data] comprising:

random access memory means having an input port and an output port, for storing the video pixel data presented at the [an] input port [and having at least one output port];

[means for storing] said video pixel data representing the [a] full size video image at a first resolution being stored in a first group of memory locations in said random access memory means;

bulk storage memory for also storing the video pixel data and for presenting selected groups [blocks] of video data at said input port for storage by said random access memory means;

size reducing means responsive [coupled] to said random access memory means for ^{directly} receiving [accessing] said [image] video pixel data stored in said random access memory means representing said full size image at said first resolution, and for reducing said image to the [a] reduced size [counterpart] image at the [a] second[,] lower resolution, and for supplying [storing] said reduced size image at said second resolution, ^{directly back} to [in] said random access memory means in a second group of memory [storage] locations therein; [and]

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control means coupled to said random access memory means, to said bulk storage memory [means] and to said size reducing means, for causing said size reducing means to generate said reduced size image at said second resolution and to supply [store] same to [in] said random access memory means in said second group of memory [storage] locations; and

said control means further causing the transfer of [each time] the full size and reduced size video pixel data from said random access memory means [is to be transferred] to said bulk storage memory [means] for storage, [and for causing the video pixel data from both said first and second plurality of memory locations in said random access memory means to be transferred to said bulk storage means for storage after said reduced size image is generated and stored in said second group of storage locations,] and for causing the selective transfer [of video pixel data] from said bulk storage memory ^{directly} [means] into said random access memory means of [for storage such that] either said full size image at said first resolution [image] or said [only the] reduced size image at said second lower resolution [counterpart are transferred into said random access memory means].

20. (amended) The apparatus of claim 19 wherein said control means also determines the [is coupled for causing] selective transfer of said reduced size image at

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said second resolution [image directly] from said size reducing means into said bulk storage memory via the random access memory means.

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21. (amended) The apparatus of claim 19 wherein said control means also determines [is coupled for controlling] the memory locations in said random access memory means where the video pixel data defining said reduced size image at said second resolution [image] are stored upon transfer from said bulk storage memory [means].

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22. (amended) The apparatus of claim ⁸ 19 [21] wherein said size reducing means produces said reduced size image at said second resolution [image] with one fourth [1/16th] the spatial resolution of said full size image at said first resolution, [image] and wherein said control means determines the [is coupled for causing] transfer of said reduced size image at said second resolution [image] into said random access memory means for storage at a selected one of 16 predetermined groups [blocks] of said memory locations.

SUBJ2

23. (amended) A system for storing [and retrieving] video data representing video images which are displayable [displayed] as rasters of vertically distributed horizontal lines, each represented video image normally

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occupying a raster of selected vertical and horizontal size,
the system comprising:

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a video image size reducer having an input
for receiving [coupled to receive] video data representing a
video image corresponding to the [a] selected raster size
and for generating [generate therefrom at an output] video
data representing a reproduction of said video image at
[corresponding to] a selected fractional-size of said
selected raster size;

a first store [having an input] for receiving
video data for storage and [an output] for providing video
data therefrom [retrieved from storage], said first store
having a capacity for storing the video data representing a
video image corresponding to [of] the selected raster size
together with video data representing said [a] reproduction
of a video image at [corresponding to] the selected frac-
tional-size [of said selected raster size];

a second store [having an input] for receiv-
ing and storing both the video data from the first store
[for storage] and [an output] for providing video data
therefrom [retrieved from storage], said second store having
a capacity for storing video data representing a plurality
of video images each corresponding to [a video frame of] the
selected raster size, and video data representing a plurality
of the reproductions [reproduction] of each video image at
the [of] selected fractional-size of said selected raster
size; and

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means for selectively transferring from said second [first] store to said first [second] store either said video data representing one of the plurality of [a] video images [image] corresponding to the selected raster size, or said video data representing the plurality of reproductions [a reproduction] of each [a] video image; at [which is] the selected fractional-size of said selected raster size.

Claims 24, 25, please cancel without prejudice.

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26. (amended) The method of claim 29 [24] wherein each one of the full size images [image] occupies upon display a raster of selected vertical and horizontal size, [and] further comprising: [the steps of]
 storing the [a] plurality of full size images and the plurality of their reduced size reproduction images; [and]
 retrieving [accessing] the [a] plurality of reproductions of each video image [selected reduced size images]; [and]
 storing the plurality of reproductions [them] in a random access memory; and
 outputting the [group of] stored plurality of reproductions [reduced size reproduction images] as a mosaic of reproduction images occupying a raster of the selected vertical and horizontal size.

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~~27~~ (amended) A method of storing video pixel data comprising:

receiving and storing in selected storage locations in a random access memory, full video pixel data comprising a full size image;

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generating from the full video pixel data, reduced [therefrom] video pixel data representing a reproduction thereof in the form of a reduced size image at a lower resolution; [from the full size image data and]

storing the reduced video pixel data representing the reduced size image [so generated] in additional storage locations in said random access memory along with the full video pixel data [size image];

storing both the full size image and the reduced size image in bulk storage memory; and

selectively transferring either the full size image or the reduced size image from said bulk storage memory [means] into said random access memory [means] for further processing.

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~~28~~ (amended) A video still store system comprising:

an external source for supplying a plurality of full size image data sets representative of corresponding full size images;

an image store for storing said full size image data sets [representing a plurality of full size

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images], and for storing a like plurality of reduced size image data sets representing a plurality of reduced size images, each of said reduced size image data sets corresponding to one of the full size image data sets;

[an external source input for receiving from an external source full size image data sets;]

a memory for simultaneous storage of one of said full size image data sets and a [the] corresponding one of said reduced size image data sets;

a size reducer means for receiving from said memory the stored one of said full size image data sets, and for producing and returning to said memory the corresponding one of said reduced size image data sets [set];

said memory being responsive [coupled and operative] to [selectively receive from] either the external source [input] or the image store for storing [and to store] said one of said full size image data sets, [and to output as an output image the stored one of said full size image data sets, and to communicate to the size reducer the stored one of said full size image data sets, and to receive from the size reducer and to store the corresponding reduced size image data set,] and for supplying [to provide] to the image store both the stored one of said full size image data sets and the corresponding one of said reduced size image data sets; [set,]

said memory being responsive to [and to receive from] the image store [and] to store at different

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selected locations the [selected ones of said] plurality of reduced size image data sets[, and]

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said memory further supplying [to output] as an [said] output image either the plurality of reduced size image data sets arranged [stored selected ones such that the selected one are disposed] at different locations within the output image, or the [to receive and store from said image store only a] full size [sized] image data set; and

means responsive to [retrieve data from] said memory for displaying the output image as [and display it on] a raster scanned video display.

[Please add the following new Claim 29 to replace original Claims 24, 25.]

SUBJ37

--29. A method of storing video pixel data for access and display comprising:

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providing data sets for a plurality of full size images at a first spatial resolution;

generating, from the data sets of the full size images, second data sets representing a corresponding plurality of reduced size reproduction images at a second lower spatial resolution;

storing both the data sets of the plurality of full size images and the data sets of the corresponding plurality of reduced size reproduction images in respective selected groups of storage locations; and

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selectively accessing either one of the data sets of the plurality of full size images or the sets of the corresponding plurality of the reduced size reproduction images simultaneously.--

REMARKS

By this amendment, Claims 24, 25 are cancelled without prejudice and replaced by new Claim 29; Claims 2-4, 6, 7, 15-23, 26-28 are variously amended and along with Claim 29 are submitted for consideration in view of the remarks following. Applicant notes with appreciation the allowance of Claims 2, 15, 18, 19, 27, 28 if amended to overcome the rejection under 35 USC 112, and the allowance of Claims 3, 4, 6, 7, 20-22 if amended to overcome the 35 USC 112 rejection, and to include the limitations of the base and intervening claims.

In his Office Action, the Examiner rejected Claims 2-4, 6, 7, 15-28 under 35 USC 112, second paragraph; and Claims 16, 17, 23-26 under 35 USC 102(b) as anticipated by Taylor et al, '776.

Applicant has carefully reviewed the specification and has corrected various inconsistencies therein. The claims have also been carefully reviewed particularly in light of the Examiner's rejections and helpful suggestions, and have been amended throughout in keeping with the Examiner's suggestions as well as for purposes of standardizing and/or clarifying the language thereof.

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More particularly, regarding the rejection under 35 USC 112, second paragraph, the specific suggestions in Items (paragraphs) 1-6, 8-13, 18-19 and 23-25, of the Office Action, pages 1-4, have been complied with.

In Items 15-17, 21, 29 and 30 the claims in question have been amended to positively recite antecedents for the various terms referred to by the Examiner.

In Item 7, the term "one-fourth" is correct for the term "spatial resolution". One-sixteenth refers to the storage capacity of a single full size image, that is, over a picture raster. (See page 6, lines 15-18). Claim 22 also has been corrected.

In Item 14, lines 23, 24 (of the original claims) the storage refers to both the full size and reduced size data sets as clarified.

In Item 20, lines 13, 14, "either" image (is) stored.

In Item 22, line 2, the means being accessed is now clearly identified.

In Item 26, the passage in lines 9, 10 was deleted as redundant, and the language in lines 5-8 is amended to clarify the storage of full and reduced size image data.

In Items 27, 28, the "video pixel data" and "said succession of full size images" properly refer back to lines 5, 6 and line 6, respectively, of the original claims.

In Items 31 and 32, Claim 25 has been cancelled.

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In Item 33, Claim 26 is now made dependent on new Claim 29, and in line 1, "each one of the full size images" refers back to Claim 29, lines 3-4. In lines 4-5 of original Claim 26, the "reduced size reproduction images" are recited in new Claim 29, line 7.

In Item 34, original Claim 26, line 7, "outputting the stored plurality of..." properly refers back to Claim 29, line 11.

In Item 35, Claims 27 and 28 have been carefully amended to clarify similar problems in antecedents as corrected in the other claims.

In Item 36, Applicant has deleted the term "operable" throughout all the claims and believes the claims as amended herein now recite language which is definite.

Accordingly, Applicant respectfully requests the withdrawal of the rejection under 35 USC 112, second paragraph, of Claims 2-4, 6, 7, 15-28 (and 29).

Regarding now the rejection of Claims 16, 17, 23-26 under 35 USC 102(b) as anticipated by Taylor et al, '776, Applicant has amended Claim 16, and has re-written Claims 24, 25 as new Claim 29. It is submitted that Taylor et al fails to anticipate the features in independent Claims 16 and 29, as well as independent Claim 23.

More particularly, Taylor et al may, in fact, include two stores, or memories 14/24 and 18/20, and an image size changer 23. However there is no further similarity to Applicant's invention as described and claimed.

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The electronic arrangement and cooperating functions of the electronics are not similar, and are not the equivalent of the cooperating functions of Applicant's combination, as recited in Claims 16, 17, (new) Claim 29, and Claim 26 dependent upon Claim 29. The size changer 23 of Taylor et al is disposed between his frame store 14/24 and his disc store 18/20, and therefore supplies only reduced (or expanded) images to the disc store 18/20 (contrary to the Examiner's statement that both full and reduced images are stored in the disc store). Taylor et al thus teaches the use of a size change process each time a video image is supplied from the frame store 14/24 to the disc store 18/20 (FIGS. 5, 19), and also when the image is supplied from the disc store back to the frame store (FIGS. 18, 19).

On the other hand, Applicant's size reducer 26 is bidirectionally coupled only to his frame store 22, and is responsive to the frame store to supply a reduced size image at such time as only a full size image is stored in the frame store. In addition, Applicant's frame store 22 then supplies both the full size image and its corresponding reduced size image back to his disc store 24 for storage together. Subsequently, the full size images individually are returned to the frame store 22, or any number of the selected plurality of the reduced size images are returned for storage in the frame store 22, whereupon such re-stored images can be repeatedly read out.

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Note further, that in Applicant's system, it is the frame store 22 which is accessed to provide the image output for display, further use, etc. More particularly, the frame store 22 has two modes of access; first, it receives and stores a full size image, which then is repeatedly read out from the frame store 22; or second, it receives and stores all (or part of) a plurality (e.g., 16) of reduced size images, which then are all (or partially) repeatedly read out from the frame store 22 simultaneously as a single mosaic of whatever plurality of reduced size images was stored in the frame store 22. That is, in the second mode, all of the stored, reduced size images are outputted for display simultaneously in a single video picture, each in its assigned two-dimensional location in the picture raster.

Taylor et al fails to provide or intend the above discussed features.

Accordingly, Claim 16 now recites inter alia, means for storing in a second memory (i.e., frame store 22) the second lower resolution pixel data together with a (full) first resolution pixel data, and means for accessing the second memory to supply either the first resolution pixel data (one full video image), or the second resolution pixel data (multiple reduced video images), for further processing. These features are not taught or suggested by Taylor et al.

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Claim 17 is dependent upon Claim 16 and further specifies that multiple sets of second resolution pixel data are accessed from selected groups of memory locations in the second memory...to allow simultaneous read out and display of the multiple sets of data at the second resolution in a single composite mosaic. These features also are not taught or suggested by Taylor et al.

Likewise, Claim 29 include steps of providing data sets for a plurality of full size images, generating a like plurality of reduced size images from the respective data sets of full size images, storing both the full size data sets and the reduced size data sets in respective groups of storage locations, and selectively accessing either, one of the full size data sets or (all) of the reduced size data sets simultaneously. Claim 26 further recites steps of storing the plurality of full size images and their reduced size images, in respective groups of storage locations, and retrieving the reduced size images and storing them in a random access memory. The Claim 26 continues with outputting the plurality of reproductions (of the reduced size images) as a full size mosaic, etc.

These features of Claims 29 and 26 are not taught or suggested in Taylor et al.

For the same reasons as above, Claim 23 recites language which is not anticipated by Taylor et al. In Claim 23, a first store stores video data representing a full size video image as well as the reduced size video image

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corresponding to the full size video image, a second store receives and stores a plurality of full size video images and a like plurality of the reproductions thereof at a fractional-size. Claim 23 further includes means for transferring either one of the full size video images, or the plurality of reproductions as a full image, from the second store to the first store.

These features also are not taught or suggested in Taylor et al.

Accordingly, Applicant respectfully submits that the rejection of Claims 2-4, 6, 7, 15-28 (and 29) under 35 USC 112, second paragraph, is overcome for reasons given above, and that amended Claims 16, 17, 23-26 are not anticipated by Taylor et al but are allowable thereover as discussed above. Action in the form of allowance of Claims 2-4, 6, 7, 15-23, 26-29 is earnestly solicited.

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If Examiner finds slight differences that can be resolved by a telephone interview, Applicant hereby requests leave for such interview by telephoning the undersigned collect at (415) 367-3331.

Respectfully submitted,

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Dated: April 27, 1988

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